

FA Career Roadmap

William Vanderlinde
IARPA
College Park, MD
William.e.vanderlinde@ugov.gov

FA Career Roadmap

- How do I get back in the game?
- Where is the FA business heading?
- How do I improve my value?

Part 1: How do I get back in the game?

1. Networking
2. Networking
3. Networking

How do I get back in the game?

- 4. Stay active in the community**
 - 5. Select your target company**
 - 6. Connect with company “insiders”**
- Use your college alumni association**
 - Check company websites**

Part 2: Where is the FA business heading?

1970s & early 1980s:

- Few thousand transistors per die**
- Visual inspection, mechanical cross-section, SEM/EDS analysis**

1990s:

- Millions of gates per die**
- Automated defect review systems**
- e-beam probing**
- introduced scan chain diagnostics**
- FIB cross-sectioning**

Where is the FA business heading?

2000s:

- **Hundreds of millions one billion transistors per die**
- **Optical fault isolation tools**
- **Backside probing and photoemission**
- **AFM, TEM, FIB lift-out**
- **Team approach: FA, design, test, specialized analysis**

**“It’s tough to make predictions,
especially about the future.”**

- Yogi Berra

2010s:

- smaller transistors**
- more transistors per die (Billions and Billions!)**
- new fault isolation techniques**
- built-in self test**
- non-visible defects / process variations**
- More sophisticated and expensive tools
(STM, STEM, RBS, Atom probe, SIMS, ???)**

Where is the FA business heading?

2010s:

- **Advanced FA consolidated to fewer locations, i.e. central labs or outsourced**
- **FA will require more education and training**

Part 3: How do I improve my value?

Contribution Continuum

Career Stages	Average Age	% ranked above average by employer	Pay premium (adjusted for age & education)
1. Acquiring Knowledge	39	15%	10%
2. Applying Knowledge	39	26%	20%
3. Creating Knowledge	41	60%	30%
4. Sharing Knowledge	41	70%	40%
5. Leveraging Knowledge	44	94%	50%

Adapted from Bristow & Bristow, IEEE On-Line June 2009

Creating & Sharing Knowledge

Teaching is the best way to learn

- Teach a course (university, ISTFA tutorial, EDFAS short course)**
- Mentor other engineers**
- Report on what you learned at ISTFA**

Study with the experts

Publish

Leveraging Knowledge

90% of experience that will advance your career has nothing to do with assigned engineering tasks

- Tiger teams and committees**
- Special assignments**
- Expand network, increase visibility**
- Develop a “vision”**

More thoughts on work

- Life is not a homework assignment
- Solve problems – it doesn't matter how
- Build alliances
- Do what you enjoy doing

A final thought

Always be polite. This costs you nothing and may pay dividends.